

July 1, 1930.

W. A. TRAUD

1,769,870

GRINDER MECHANISM

Filed May 3, 1928

2 Sheets-Sheet 1

Fig. 1.

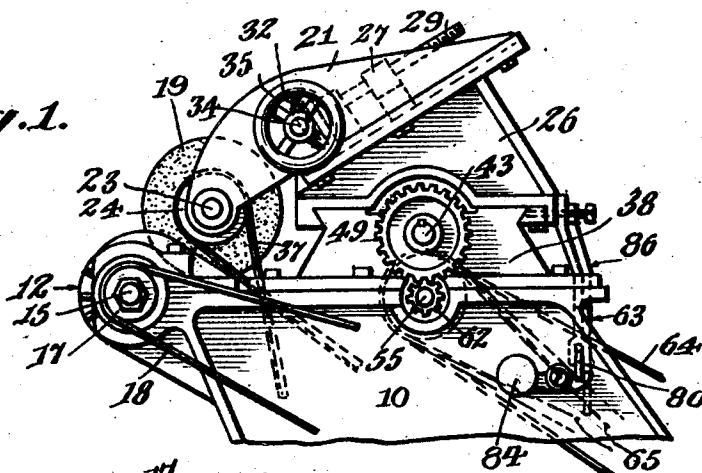
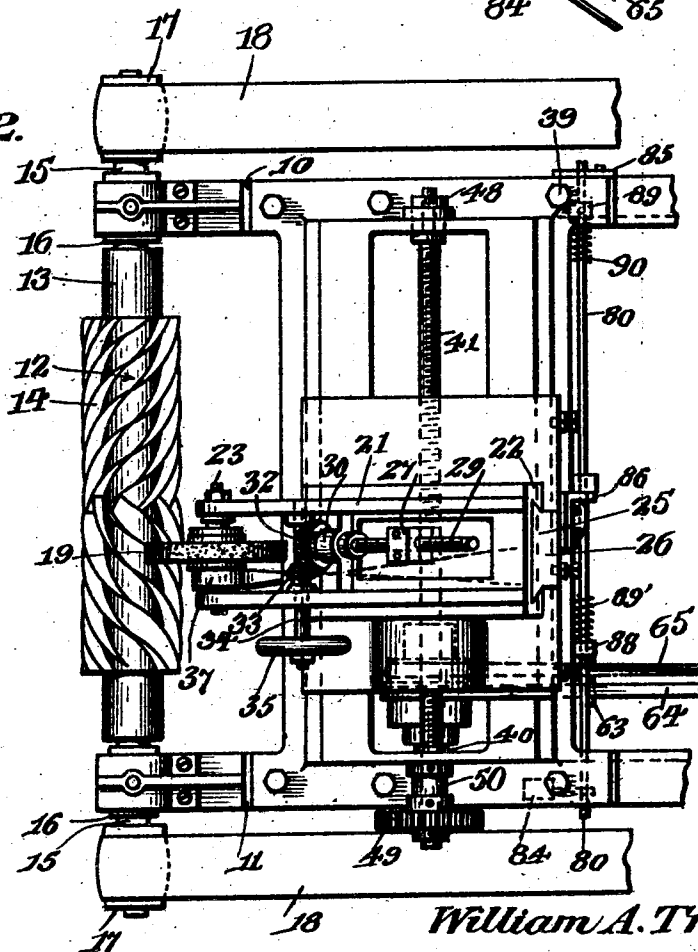


Fig. 2.



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2 Sheets-Sheet 2

Fig. 3.

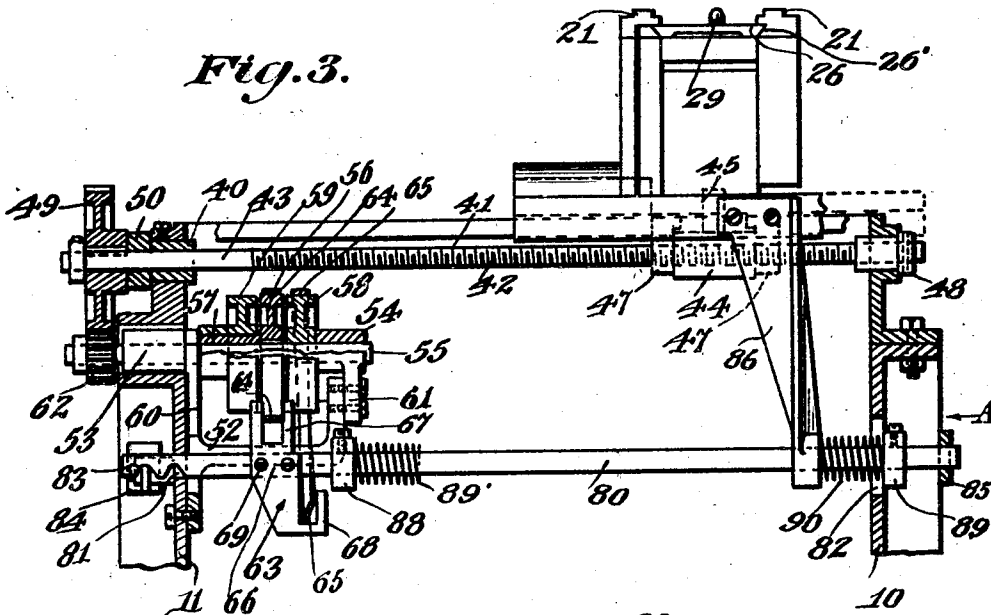


Fig. 4.

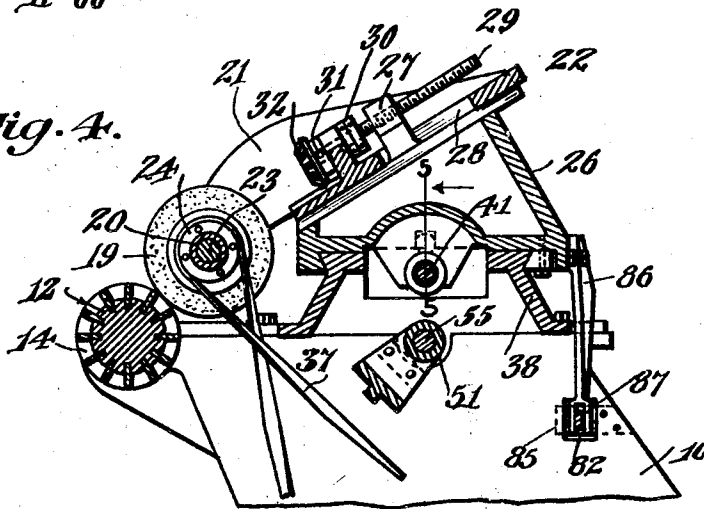


Fig. 5.

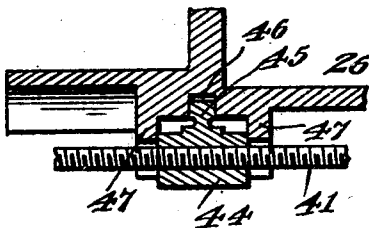
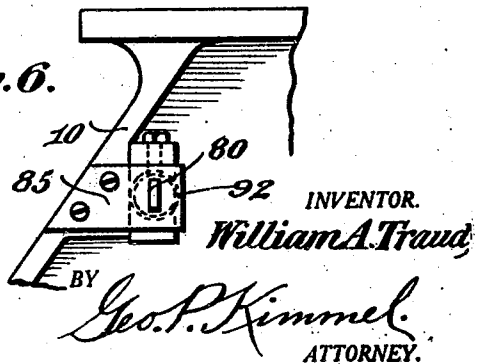


Fig. 6.



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GRINDER MECHANISM

Application filed May 3, 1928. Serial No. 274,874.

This invention relates to a grinder mechanism designed primarily for the sharpening of the cutting unit of leather shaving machines, but it is to be understood that a grinder mechanism, in accordance with this invention may be employed in any connection for which it is found applicable, and the invention has for its object to provide, in a manner as hereinafter set forth, a machine of the class referred to capable of being so disposed with respect to a rotatable, cylindrical cutting unit for sharpening the same simultaneously with the operation thereof to provide a true round therefor thereby resulting in a uniform cut by the unit.

A further object of the invention is to provide, in a manner as hereinafter set forth, a grinder mechanism including an abrading, grinding or sharpening elements bodily shiftable, while revolving by a travelling carrier and with the mechanism further including means for automatically reversing the direction of the travel of the carrier to provide for the latter to alternately travel in opposite directions with respect to the object being acted upon by the abrading, grinding or sharpening element.

A further object of the invention is to provide, in a manner as hereinafter set forth, a grinder mechanism including a driven, revolvable bearing element mounted upon a fixed shaft and having secured thereto an abrading, grinding or sharpening element, and with the shaft connected to a travelling carriage whereby the bearing and abrading elements will be bodily moved on the travel of the carriage to provide for the abrading element, while revolving, traversing the object upon which such abrading element is acting to sharpen the same.

A further object of the invention is to provide, in a manner as hereinafter set forth, a grinder mechanism including a revolvable, bodily shiftable, adjustable abrading, grinding or sharpening element capable of being adjusted toward and from the object being sharpened and further traversing the object in alternate directions when acting on the same to sharpen it.

Further objects of the invention are to

provide, in a manner as hereinafter set forth, a grinder mechanism which is simple in its construction and arrangement, strong, durable, compact, including an abrading element traversing the object acted upon alternately in opposite directions, automatically reversing the direction of the travel of such element, thoroughly efficient in its use, readily assembled, adjustable, and comparatively inexpensive to set up.

With the foregoing and other objects in view the invention consists of the novel construction, combination and arrangement of parts as hereinafter more specifically described, and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which fall within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:—

Figure 1 is a side elevation of a grinder mechanism in accordance with this invention showing the adaptation thereof with respect to a rotatable cutting unit or cylinder of a leather shaving machine.

Figure 2 is a top plan view of the mechanism and further showing the adaptation thereof with respect to a rotatable cutting unit or cylinder of a leather shaving machine.

Figure 3 is a fragmentary view, partly in section looking toward the rear of the mechanism.

Figure 4 is a cross sectional view of the mechanism and further illustrating the same positioned with respect to a rotatable cutting unit or cylinder.

Figure 5 is a fragmentary view in section of the mechanism and taken on section line 5—5 Figure 4.

Figure 6 is a fragmentary view in elevation of one of the supports employed for the mechanism looking in the direction of the arrow A Figure 3.

A grinder mechanism, in accordance with this invention, is illustrated, by way of example as disposed with respect to the rotat-

able cutting unit of a leather shaving machine.

In the drawings 10 and 11 denote the side frames of the supporting structure or body portion of a leather shaving machine, 12 the rotatable cutting unit comprising a cylinder 13 carrying lengthwise thereof cutters or blades 14 and formed with spindles 15 mounted in and extended from bearings 16. The spindles 15 have driven pulleys 17 operated from belts 18 for rotating the cutting unit. Bearings 16 are mounted on the top of the side frames 10 and 11. The foregoing elements are illustrated so that one can readily understand the adaptation of a grinding mechanism, in accordance with this invention with respect to a cutting unit.

The grinder mechanism includes an abrading, grinding or sharpening disc 19 herein-after referred to as an abrading disc and which is to operate on the top of the cutting unit and bodily travels, while revolving lengthwise with respect to the cutting unit and alternately in opposite directions. The abrading disc 19 is also bodily shiftable toward the cutting unit and is fixed to a revolvable roller bearing 20, so as to bodily revolve therewith, on the operation of the bearing. Fixed in the forward ends of the sides 21 of an adjustable carrier 22 is a stationary shaft 23 upon which the bearing 20 is revolvably mounted. The bearing 20 is extended from the disc 19 and has fixedly secured thereto a driven pulley 24 to provide for the revolving of the bearing 20 on the shaft 23 for the purpose of operating the disc 19. The bearing 20 is connected to the shaft 23 in a suitable manner to prevent the bearing from shifting lengthwise of the shaft.

The carrier 22 is slidably connected to the downwardly inclined top 25 of a carriage 26. There is a dove-tailed connection 26' between the carrier 22 and top 25. The sides 21 of the carrier 22 project forwardly with respect to the carriage 26 whereby the shaft 23 is suspended forwardly of the carriage 26.

The carrier 22 is manually adjustable for the purpose of shifting the disc 19 to and from the cutting unit and for such purpose the top 25 of the carriage is provided with an upstanding, fixed lug 27 which inclines forwardly and projects through an opening 28 formed in the carrier 22. Threadedly engaging with and extending through the lug 27 is an adjusting screw 29 disposed at the same inclination as the inclination of the carrier 22. The screw 29 is carried by a rear extension 30 on the hub 31 of a beveled gear 32. The hub 31 is secured to the carrier 22 forwardly of the lug 27. Meshing with the gear 32 is a beveled pinion 33 carried by a shaft 34 journaled in and projecting outwardly from one of the sides of the carrier

22. The outer end of the shaft 34 is provided with a hand wheel 35 to facilitate the operation thereof.

The pulley 24 is driven from a twisted belt 37 operated by any suitable means.

The grinding mechanism includes a track forming member 38 for the carriage 26 and the latter is adapted to travel alternately in opposite directions lengthwise with respect to the track forming member 38. As illustrated the track forming member is shown as mounted upon the side frames 10, 11 of the supporting structure for the machine and said member 38 acts as a coupling means between the upper ends of the frames 10 and 11. Holdfast devices 39 are employed for fixedly securing the track forming member 38 to the side frames 10, 11.

The shaft 23 is removably connected in any suitable manner to the sides 21 of the carrier 22 to permit of expeditiously removing the shaft 23 to enable the substitution of a new abrading disc when occasion requires.

Rotatably supported in flanged bearings 40 mounted in the ends of the members 38, as well as projecting from the bearings 40, is a shifting rod 41 for the carriage 26. The rod 41 is peripherally threaded as at 42 and with the threads 42 terminating adjacent one end of the rod 41 to provide a non-threaded portion 43.

Mounted on the rod 41 is an internally threaded sleeve 44 formed with an upwardly disposed lug 45 which extends into a socket 46 formed in the bottom of the carriage 26. Carried by the bottom of the carriage 26 is a pair of spaced, depending, bifurcated arms 47 arranged in opposed relation and between which is positioned the sleeve 44 and through which extends the rod 41. The sleeve 44 is movable lengthwise of the rod 41, alternately in opposite directions and which provides for the travel of the carriage therewith, and as the latter is shifted the carrier 22 and abrading disc 19 will also be shifted in the same direction as the carriage 26. As the carrier shifts with the carriage the abrading disc will travel, while rotating lengthwise of the cutting unit.

One end of the rod 41 is provided with a stop collar 48. The non-threaded portion 43 of the rod 41 is provided adjacent the end of the member 38 with a gear wheel 49 having an extended hub spaced from a bearing 40 by a collar 50. The gear wheel 49 is positioned adjacent the side frame 11 of the supporting structure of the machine.

The top of the side frame 11 is cut away to provide a clearance 51 and secured to the inner side of the frame 11, as well as projecting inwardly therefrom and further in alignment with the clearance 51 is a bearing bracket 52 formed with a pair of bearing members 53, 54 which oppose each other

and are arranged in spaced relation. The bearing member 53 extends into the clearance 51. Mounted in the bearing members 53, 54 and projecting outwardly from the former is a transmission shaft 55 for the screw rod 41.

Keyed to the shaft 55 is a driving pulley 56 therefor and which is provided with an extended hub 57 which abuts the bearing member 53. Loosely mounted on each side of the pulley 56 is an idler pulley. One of the idler pulleys is indicated at 58 and is loosely mounted on the shaft 55 between the pulley 56 and the bearing member 54. The other idler pulley is indicated at 59 and is mounted on the extended portion of the hub 57 of the pulley 56. The hub of the pulley 59 is extended to engage the bearing member 53. The bracket 52 is formed of two sections 60, 61 detachably connected together. The section 60 carries the bearing member 53 and the section 61 the bearing member 54. The section 60 is fixedly secured to the side frame 11 by a suitable holdfast means.

That end of the shaft 55 which projects from the bearing member 53 carries a pinion 62 positioned exteriorly of the side frame 11. The pinion 62 meshes with the gear 59 for the purpose of driving it thereby rotating the screw rod 41.

The pulley 56 is alternately driven in a clock-wise and in an anti-clock-wise direction, to provide for the alternate travelling of the carriage 26 in opposite directions, and for such purpose an automatically adjustable operating means is provided for the pulley 59. Said means includes a one-piece shifting member 63 for a pair of driving belts 64, 65. The belt 65 is twisted for the purpose of driving the pulley 59 in an opposite direction from that in which it is driven by the belt 64.

The member 63 comprises a body portion 66 provided at its top with a yoke 67 and at one side of its lower portion with a yoke 68. The yoke 67 has the belt 64 passed therethrough and is employed for shifting the belt 64 onto and off of the pulley 56 from pulley 59. The yoke 68 is used for shifting the belt 65 onto and off of the pulley 56 from the pulley 58. The belts 64 and 65 are alternately mounted on pulley 56, and when a belt is positioned thereon it is latched in driving position with respect thereto until the carriage 26 reaches the limit of its travel in one direction.

The member 63 has its body portion 66 fixedly secured by holdfast devices 69 near one end of a latchable, spring controlled shifting bar 80 for the said member 63. The bar 80 projects through opposed slots 81, 82 formed in the side frames 10 and 11. The slot 82 is of greater height than the slot 81 as the latter has its end walls arranged to

have a sliding fit with the bar 80 whereas the slot 82 is of materially greater height than the vertical width of the bar 80. One end of the bar 80 has its bottom edge formed with a set of notches or teeth 83.

Secured to the outer face of the side frame 11 is a pivoted, counter-balanced latching member 84 which extends across the slot 81 and also in the path of the notched end of the bar 80. The side frame 10 is provided with a supporting bracket 85 for the bar 80.

Depending from the carriage 26 and straddling the bar 80 is an actuating arm 86 which is adapted to slide lengthwise of the bar 80 to engage resilient stops mounted thereon. The lower end of the arm 86 is of inverted U-shape, as at 87, for the purpose of straddling the bar 80. The stops mounted on the bar 80 are indicated at 87, 88 and each of which consists of a collar adjustably secured to the bar 80 and a coiled spring bearing against the collar. The lower end of the stop lever 86 is positioned between the coiled springs of the stops and said springs are indicated at 89, 90. One of the stops is arranged in proximity to the member 63 and the other of the stops in proximity to the bracket or support 85. When the stops are engaged by the arm 86 the bar 80 is shifted carrying the belt shifting member 63 with the bar 80. When the arm 86 engages the spring of the stop 88 the bar 80 is shifted in a direction whereby the member 63 will move the belt 64 from off the pulley 56 and onto pulley 59 and move belt 65 from off of pulley 58 onto pulley 56. When the arm 86 engages the spring of the stop 89 it will shift the bar 80 in a direction whereby the member 63 will move the belt 64 from off of pulley 59 and onto pulley 56 and move belt 65 from off of pulley 56 and onto pulley 58. As bar 80 moves inwardly with respect to the frame 11, the latching member 84 will coact with the notch of bar 80 and latch it in position whereby belt 64 will be held in position on pulley 69 to drive the same.

When the bar 80 is shifted in a direction outwardly with respect to the frame 11, the latching member 84 will coact with another notch of bar 80 and latch it in position whereby belt 65 will be held in position on pulley 56 to drive the same. The stops are adjustable and the springs thereof also act to assist in releasing bar 80 from latching member 84.

The belts 64 and 65 are driven from any suitable means, but preferably from the operating shaft of the machine with which the grinding mechanism is associated.

Owing to the construction and arrangement of the grinder mechanism the abrading disc 19 will act upon the cutting unit to sharpen the same, while said abrading disc is travelling alternately in opposite direc-

tions lengthwise of the cutting unit and the reverse direction of travel of the abrading element is had automatically in view of the structural arrangement heretofore set forth. Further the abrading disc 19 is arranged relative to the cutting unit so that when operating on the latter it will sharpen the knives or cutters in a manner so that the cutting unit will be true round, under such conditions providing for a uniform cut on the material upon which the cutting element is operated. The abrading disc 19 is driven in a direction opposite to that in which the cutting unit is revolved. The adjusting of the screw 29 can position the abrading disc relative to the cutting unit, or in other words, the screw 29 provides for the shifting of the disc toward and from the cutting unit. The carrier is disposed at an inclination so that the disc 19 will operate upon the top of the cutting unit.

It is well known that in leather shaving machines, the cutting unit is subjected to great pressure and a horizontal deflection takes place, but by having the grinder mechanism acting at the top of the cutting unit a true round is provided for the latter resulting as before stated in accurate and uniform cutting. In sharpening the cutter unit of machines now in general use, it is the practice to grind the cutting unit immediately behind the same in a horizontal plane, and as the unit is deflected or bowed the effect of a hollow grind is produced resulting in irregular cutting of the work. This serious objection, however, is overcome by positioning the grinder mechanism, so it will act directly upon the extreme top of the cutting unit, resulting as before stated in a true round after the unit has been sharpened.

It is thought the many advantages of a grinder mechanism, in accordance with this invention and for the purpose set forth can be readily understood, and although the preferred embodiment of the invention is as illustrated and described, yet it is to be understood that changes in the details of construction can be had which will fall within the scope of the invention as claimed.

What I claim is:

1. A grinding mechanism for a cutter device comprising a carrier, a rotatable driven abrading element suspended from the carrier and adapted to act upon said device lengthwise thereof, a travelling carriage for supporting the carrier, a latchable, reversible propelling mechanism for the carriage to provide for the alternate travel of the latter in opposite directions, a combined latching and controlling means for said propelling mechanism, and an arm bodily carried by the carriage for intermittently actuating said means to alternately latch and release said mechanism in and from forward and reverse driving positions, said arm

straddling said means and said means including a pair of spaced, resilient abutments positioned in the path of said arm, said propelling means for the carriage having an element thereof extending into and confined in the carriage.

2. A grinding mechanism for a cutter device comprising a carrier, a rotatable driven abrading element suspended from the carrier and adapted to act upon said device lengthwise thereof, a travelling carriage for supporting the carrier, a latchable, reversible propelling mechanism for the carriage to provide for the alternate travel of the latter in opposite directions, a combined latching and controlling means for said propelling mechanism, and an arm bodily carried by the carriage for intermittently actuating said means to alternately latch and release said mechanism in and from forward and reverse driving positions, said means including spaced, resilient abutments alternately engaged by said arm during the travel of the carriage, that part of said means providing for the latching of said propelling mechanism arranged at one end of said means, and that part of said means providing for the controlling of the propelling mechanism arranged in proximity to the portion of said means which provides for the latching of the propelling mechanism.

3. A grinding mechanism for a cutter device comprising a carrier, a rotatable driven abrading element suspended from the carrier and adapted to act upon said device lengthwise thereof, a travelling carriage for supporting the carrier, a latchable, reversible propelling mechanism for the carriage to provide for the alternate travel of the latter in opposite directions, a combined latching and controlling means for said propelling mechanism, and an arm bodily carried by the carriage for intermittently actuating said means to alternately latch and release said mechanism in and from forward and reverse driving positions, said propelling means for the carriage having an element thereof extending into and confined in the carriage, that part of said means providing for the latching of said propelling mechanism arranged at one end of said means, and that part of said means providing for the controlling of the propelling mechanism arranged in proximity to the portion of said means which provides for the latching of the propelling mechanism.

4. A grinding mechanism for a cutter device comprising a carrier, a rotatable driven abrading element suspended from the carrier and adapted to act upon said device lengthwise thereof, a travelling carriage for supporting the carrier, a latchable, reversible propelling mechanism for the carriage

to provide for the alternate travel of the latter in opposite directions, a combined latching and controlling means for said propelling mechanism, and an arm bodily carried by the carriage for intermittently actuating said means to alternately latch and release said mechanism in and from forward and reverse driving positions, said means including spaced, resilient abutments alternately engaged by said arm during the travel of the carriage, said propelling means for the carriage having an element thereof extending into and confined in the carriage, that part of said means providing for the latching of said propelling mechanism arranged at one end of said means, and that part of said means providing for the controlling of the propelling mechanism arranged in proximity to the portion of said means which provides for the latching of the propelling mechanism.

5. A grinding mechanism for a cutter device comprising a carrier, a rotatable driven abrading element suspended from the carrier and adapted to act upon said device lengthwise thereof, a travelling carriage for supporting the carrier, a latchable, reversible propelling mechanism for the carriage to provide for the alternate travel of the latter in opposite directions, a combined latching and controlling means for said propelling mechanism, and an arm bodily carried by the carriage for intermittently actuating said means to alternately latch and release said mechanism in and from forward and reverse driving positions, said arm straddling said means and said means including a pair of spaced, resilient abutments positioned in the path of said arm, said propelling means for the carriage having an element thereof extending into and confined in the carriage, that part of said means providing for the latching of said propelling mechanism arranged at one end of said means, and that part of said means providing for the controlling of the propelling mechanism arranged in proximity to the portion of said means which provides for the latching of the propelling mechanism.

6. A grinding mechanism for a cutter device comprising a carrier, a rotatable driven abrading element suspended from the carrier and adapted to act upon said device lengthwise thereof, a travelling carriage for supporting the carrier, a latchable, reversible propelling mechanism for the carriage to provide for the alternate travel of the latter in opposite directions, a combined latching and controlling means for said propelling mechanism, and an arm bodily carried by the carriage for intermittently actuating said means to alternately latch and

release said mechanism in and from forward and reverse driving positions, said means including spaced, resilient abutments alternately engaged by said arm during the travel of the carriage, said carrier including a pair of sides having said abrading element supported in said sides at one end thereof, said carriage having means for disposing said carrier at a downward inclination, and said carriage and carrier having coacting elements for adjusting the carrier relative to said device.

In testimony whereof, I affix my signature hereto.

WILLIAM A. TRAUD. 80

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